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United States Patent [19]

Yabuki et al.

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[54] **PATTERN RE-RECOGNIZING TABLE
GENERATING DEVICE AND PATTERN
RECOGNIZING DEVICE TO IMPROVE A
RELIABILITY FOR A RECOGNITION OF A
PATTERN OVERLAPPING OR
INTERSECTING A LINE IN AN IMAGE**

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Related U.S. Application Data

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[51] **Int. Cl.⁷** G06K 9/80

[52] **U.S. Cl.** 382/178; 382/310

[58] **Field of Search** 382/173, 175,
382/177, 178, 181, 227, 310, 317

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[57] ABSTRACT

A character box extracting unit extracts a line forming a character box. Then, the character box intersection calculating unit calculates the intersection of the character box with a character pattern. An intersection corresponding unit associates intersections with each other based on the directional property of character lines, distance between the character lines, etc. An in-box character extracting unit extracts a virtual image according to the association information between the intersections. A character size evaluating unit obtains from an optional character string an average character size of a character including the virtual image, and extracts a true character pattern by removing a redundant virtual image based on the average character size. A character structure analyzing and evaluating unit obtains from a prepared table a true image corresponding to the virtual image and extracts a true character pattern, thereby correctly extracting the pattern from the image in which the line crosses the pattern.11

41 Claims, 90 Drawing Sheets